

CLAIMS:

1. A ring binder mechanism for binding the sheets of loose leaves, the mechanism comprising:

an elongated spring plate that extends longitudinally and, in profile, has a shallow U-shaped configuration and opposite edges which extend substantially toward each other;

two parallel elongate hinge plates supported by said spring plate for pivotal toggle motion relative to the spring plate about a central hinge line, the hinge plates being mounted in parallel and retained by the opposite edges of the spring plate;

a plurality of rings for claspings said sheets of loose leaves, each of the rings comprising a pair of half ring elements of circular cross-section mounted on said hinge plates on the side thereof opposite said spring plate, with one half ring element of each pair being attached to one of the hinge plates and the other half ring element of the pair attached to the other hinge plate, with the two half ring elements of each pair in substantial alignment, the pairs of half ring elements being movable with said hinge plates to toggle between an open position and a closed position and forming a substantially annular shape when in the closed position;

wherein free ends of the half ring elements of each pair form a nesting configuration when in the closed position, the free end of one half ring element of each pair having a centrally concave nesting portion and the free end of the other half ring element of the pair having a centrally conical convex nesting portion, said concave portion and said convex portion being symmetrical about an axis line of the respective half ring elements of the pair, so that when the pair of half ring elements are in the closed condition, the free ends of the half ring elements are aligned to each other and nested together tightly.

2. A ring binder mechanism according to claim 1, wherein said concave nesting portion has a conical hole that is formed in the free end of one half ring element, a diameter of the conical hole being smaller than that of respective half ring element.

3. A ring binder mechanism according to claim 1, wherein the convex nesting portion in the free end of one half ring element in each respective pair has a substantially conical protruding portion with an outer diameter of a base of the protruding portion being smaller than the diameter of the respective half ring element.

4. A ring binder mechanism according to claim 3, wherein the opening of said concave nesting portion in the free end of one half ring element of each respective pair has a substantially conical hole that is formed from its external end surface and an internal cylindrical hole that is

connected to said conical hole.

5. A ring binder mechanism according to claim 4, wherein the protruding portion of said convex nesting portion has a shape that consists of a cylindrical tip and an arc-shaped annular conical base portion, the opening of said concave nesting portion has a conical hole that is formed from its external end surface and an internal cylindrical hole that is connected to said conical hole.

6. A ring binder mechanism according to claim 3, wherein the protruding portion of said convex nesting portion has a cylindrical shape, the opening of said concave nesting portion has a shape of an internal cylindrical hole.

7. A ring binder mechanism according to claim 1, wherein the nesting portion with a centrally convex portion is formed in a free end of one half ring element of said pair of half ring element pairs, and the nesting portion with a centrally concave portion is formed in a free end of the other engaging half ring element, said convex nesting portion has a protruding conical portion, the conical portion is connected to a surface of the cylindrical rod of the half ring element via an annulus internal end surface, a diameter of the conical portion on the internal end surface is smaller than that of the cylindrical rod of the half ring element, said concave nesting portion has a conical hole that is formed from its external end surface, a diameter of the conical hole on the external end surface is smaller than that of the cylindrical rod of the half ring element and substantially equal to that of said protruding conical portion on the internal end surface, when the half ring elements are in the closed condition, the external end surface of the concave nesting portion and the internal end surface of the convex nesting portion form a surface-engagement, and the conical portion of the convex nesting portion and the conical hole of the concave nesting portion form a engagement, so that the concave nesting portion is nested in the convex nesting portion.

8. A ring binder mechanism according to claim 1, wherein the pair of half ring elements of said ring binder mechanism form a circular ring.

9. A ring binder mechanism according to claim 1, wherein one half ring element of said pair of half ring elements of said ring binder mechanism has a straight side.

10. A ring binder mechanism according to claim 1, wherein two, three, four or more rings are provided in said ring binder mechanism.

11. A ring binder mechanism according to claim 1, wherein said rings are made of metal material.

12. A ring binder mechanism according to claim 1, wherein said rings are made of

plastic material.

13. A ring binder mechanism according to claim 1, wherein said rings are formed integrally with said hinge plates.